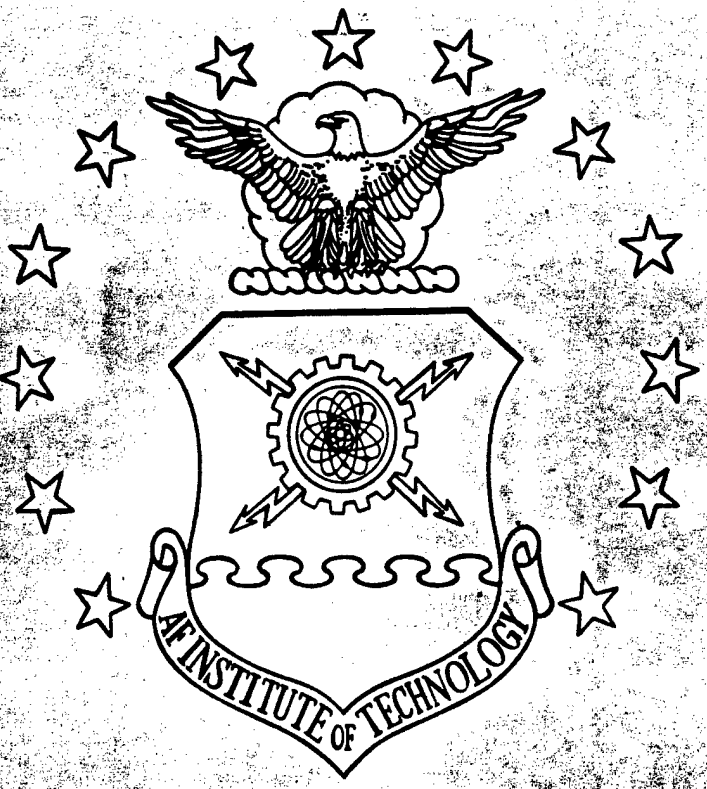

FACTORS FOR EFFECTIVE FACILITATOR TRAINING EVALUATION

THESIS

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AFIT/GCM/LAR/96S-9

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THESIS

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Mark I. Wade
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Acknowledgments

All wonder, is the effect of novelty on ignorance. Yet we are so created that without something to wonder at we should find life scarcely worth living. That fact does not make ignorance bliss, or make it 'folly to be wise.' For the wisest man never gets beyond the reach of novelty, nor can ever make it his boast that there is nothing he is ignorant of; on the contrary, the wiser he becomes the more clearly he sees how much there is of which he remains in ignorance. The more he knows, the more he will find to wonder at.

Samuel Johnson

I am greatly indebted to my thesis advisor, Lieutenant Colonel James R. Van Scotter, who allowed me the freedom to explore strange new worlds and did not criticize me when I ran into a dead end. Thank you for being patient with my ignorance and allowing me to take over this project on which you had already invested so much hard work. I would also like to thank Captain Michael Rehg. He conducted the groundbreaking preliminary study, provided tons of source information, and helped me get my feet off the ground. Next, I would like to thank my reader, Major Terry Adler. He willingly entered the game late in the final quarter, endured very rough drafts, and provided valuable advice. Finally, I would like to thank my patient and loving wife, Joan, without whom AFIT would not have been possible. Thank you for enduring these past fifteen months, I could not have gotten through AFIT without you. Thank you also to Katie, Nathan, Carolyn, and Daniel; there were many times I would have much rather played with you guys than study. Yes, now we can go to Disney World!

Capt Mark I. Wade

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Abstract

This study evaluated the TQM facilitator training course at Wright-Patt Campus, Wright-Patterson AFB. One-hundred sixty-two civilian and military trainees completed a 113 item survey containing 7 outcome scales based on Kraiger's (1993) cognitive, skill-based and affective training outcomes. Additional criteria, including experience, training, attitudinal, personality, and organizational support factors, were evaluated for their influence on training outcomes. Results from intercorrelational and hierarchical regression analysis strongly supported the theoretical model of effective facilitator training and suggest that the Wright-Patt Campus does provide effective TQM facilitator training. This study also identified several factors that appear to contribute to improved facilitator effectiveness: experience, training, personality, attitude, and organizational support.

FACTORS FOR EFFECTIVE FACILITATOR TRAINING EVALUATION

I. Introduction

Problem Statement

The number of TQM and quality improvement programs has increased dramatically in recent years. Since TQM relies heavily on those closest to the work for quality control, management has to share power with employees (Brown, Hitchcock, and Willard; 1994). Most successful programs use self-directed TQM process improvement teams to maximize employee empowerment. These teams increase job involvement and harness employee knowledge of key processes to increase productivity and improve customer service. Although self-directed teams are the goal, most organizations start out with managed teams and slowly evolve into self-directed teams as the teams gain confidence (Brown et al., 1994). Facilitation is one of the critical skills that contributes to successful team building; facilitators provide process expertise and encouragement, nurturing groups from infancy to self-direction (Deal, 1995:184). TQ facilitators receive special training on group processes, identification and resolution of critical issues involving organizational goals, processes, values, and inter-relationships among organizational members (Rees, 1991:26). Obviously, the quality of TQM facilitator training is critical to the overall success of these efforts.

Given the great emphasis TQ has been given and the critical role training plays in the Total Quality movement, it is somewhat surprising that there have been few studies evaluating the effectiveness of TQ training. Plant (1992) found organizations generally lacked knowledge about how to evaluate the cost/benefit tradeoffs of employee training. The majority of respondents did not consider such an undertaking valuable, although 40-50% of organizational costs often consist of personnel costs. Likewise, the Air Force has embraced the concept of Total Quality and has made substantial progress toward instituting a quality culture by investing heavily in training programs (Fogleman, 1995:4). Although USAF facilitator training focuses on core TQ knowledge and skills, there is little evidence on the relevance of curriculum topics, the effectiveness of delivery methods, the effectiveness of the training in benefiting the student's organization, or the benefits to the students as individuals (e.g. career advancement, satisfaction, etc.). As a result, the Wright-Patt Campus has requested an evaluation of the facilitator training course.

This research will attempt to answer two questions: 1. Is the TQM Facilitator training provided by the Wright-Patt Campus effective?; and 2. What can be done to make facilitators more effective?

The results of this study will aid The Wright-Patt Campus to assess the quality and content of the facilitator training course. Additionally, the study will aid The AFMC Quality Institute with effective selection and utilization of course trainees and over all administration of the AFMC Quality program.

What is facilitation?

The word facilitate literally means "to make easy." According to Thornton (1992:46) the facilitator's role is to make it easy for groups to plan, develop goals, and solve problems. Deal (1995:184) emphasizes that facilitating is not delegating, controlling or making decisions for others. Following her lead, this study defines facilitation as the process of implementing and using TQM group procedures to maximize workplace or team participation, productivity, and satisfaction.

How do you evaluate the effectiveness of a TQM Facilitator?

TQM is expected to produce a variety of benefits including: improved understanding of customers' needs; improved customer satisfaction; improved internal communication; better problem-solving; greater employee commitment and motivation; stronger relationships with suppliers; fewer errors; and reduced waste (Powell, 1995:17). There is research that links measures of user satisfaction with system effectiveness; effective systems add value to the firm through improved productivity, fewer errors, and better decision-making (Gatian, 1994:119). If a facilitator is effective, he or she should stimulate a positive change in behavior and employee satisfaction.

The Wright-Patt Campus has been responsible for providing facilitator training to Air Force military and civilian employees; the responsibility for utilization and evaluation of individual trainees has been left to AF supervisors. The only students known to be active in facilitation are those students coming back for the "Advanced" course, since it is a course prerequisite.

Approach

The TQM Facilitator Training Course provided by the Wright-Patt Campus has three immediate and readily identifiable customers: a) the trainee, b) the trainee's supervisor, and c) the teams or groups that will use the new facilitator's services. The facilitator trainee hopes to gain new skills, qualify for a new job, or get promoted by attending the training course. The facilitator trainee's supervisor hopes to get a better employee or improve organizational effectiveness by sending employees to training.

This study focuses on the cognitive, skill-based and affective training outcomes of the facilitator trainee. In addition, this study will examine the relationships between training outcomes and a variety of individual characteristics including experience, training, attitudes, personality, and organizational support. Succeeding chapters will elaborate on the variables and scales used, and their underlying theoretical constructs.

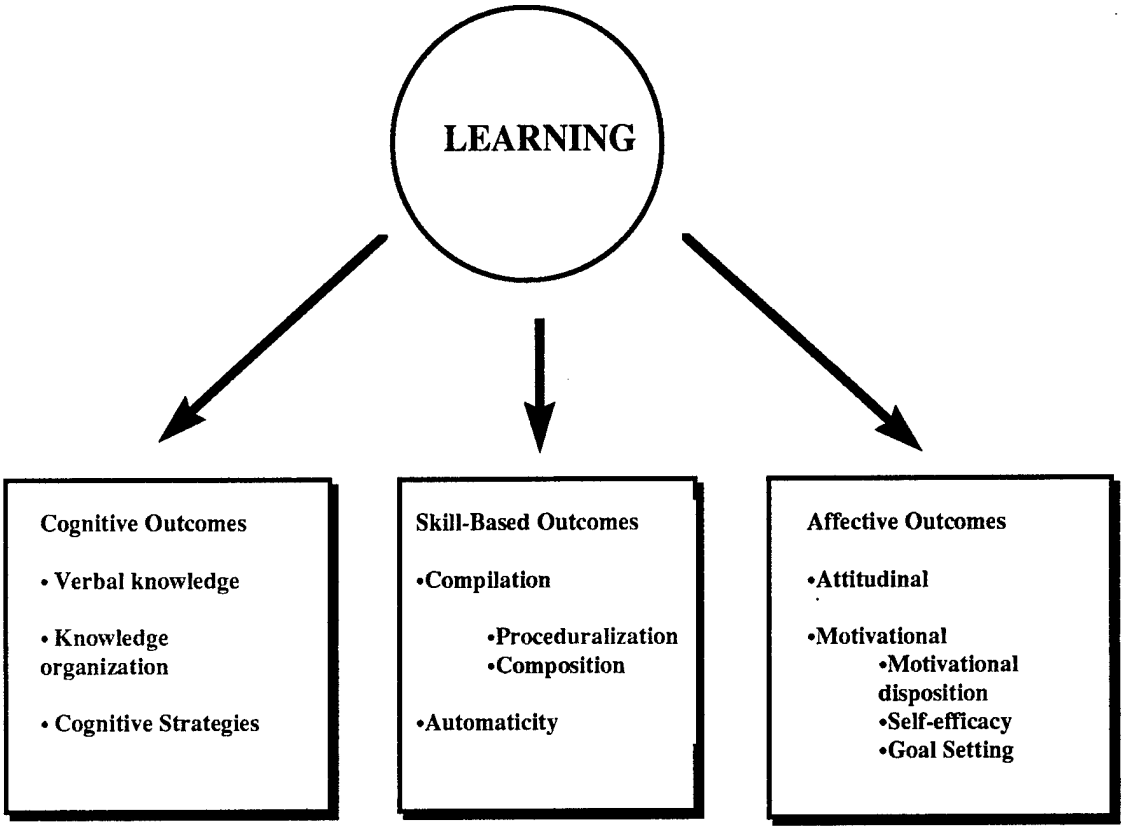
II. Literature Review

This study will evaluate facilitator training by examining outcomes of training and their relationships with various factors. This section reviews relevant training evaluation, TQM, and psychological research.

Training Evaluation

Evaluation of training is a practical problem that faces most organizations. Normally evaluation is conducted to answer one of two questions: 1) were training objectives achieved (learning), or 2) does accomplishment of training objectives lead to enhanced job performance (transfer). Unfortunately, there are no theoretically based models available to guide training evaluation (Kraiger, Ford, and Salas; 1993:311).

Researchers have recently began to develop an approach toward evaluating learning outcomes using methods derived from a variety of research domains. Kraiger et al.'s (1993) classification scheme draws constructs from cognitive, social, instructional psychology and human factors research. He proposed that training evaluation can be conducted by measuring cognitive, skill-based, and affective learning outcomes (relevant to training). Figure 1 represents an overview of the three learning outcomes of interest and their underlying constructs. For the purposes of this study, learning outcomes can be considered to be synonymous with training outcomes. These outcomes will be discussed in more detail below.



(Kraiger et al., 1993:312)

Figure 1. Kraiger's Learning Outcome Classification

Cognitive Learning Outcomes. Cognitive science looks at a group of variables that are related not only to the quantity and type of knowledge possessed, but also at the relationships among knowledge elements. An evaluation of cognitive outcomes must focus on trainee knowledge and the processes of knowledge acquisition, organization and application (Kraiger et al., 1993:313). Researchers in the training domain have traditionally used achievement tests, administered at the end of training, to measure retention of verbal or declarative knowledge (Kraiger et al., 1993:313). These tests may

be a series of multiple-choice or true-false questions designed to measure the presence of each stimulus (answer) in the trainee's memory. Investigators in other psychological disciplines have determined that the acquisition of verbal knowledge is the foundation for cognitive skill development, however "measures of verbal knowledge may be unable to discriminate among learners at higher levels of cognitive development" (Kraiger et al., 1993:313). Gagne (1984) proposed three general categories of cognitive learning: verbal knowledge, knowledge organization, and cognitive strategies. All three measures should be useful for evaluation at any trainee skill level, however they are considered to be ordered chronologically with respect to trainee developmental stages; verbal knowledge measures are most sensitive during initial stages of skill acquisition, while strategy-based measures are most useful for more advanced students (Kraiger et al., 1993:313). Considering this research, a cognitive measure of verbal knowledge gained during the course would appear to be an appropriate tool for measuring cognitive outcomes. This method would seem especially appropriate considering our facilitation trainees are relatively new to the field, all having taken the course within the past two years. This study will use a Facilitator Knowledge test to measure cognitive outcomes.

Facilitator Knowledge. A minimum requirement for facilitator competency would be some understanding of the vocabulary and basic concepts of facilitation. Verbal knowledge about these concepts relevant to the job of the facilitator are cognitive outcomes (Kraiger et al., 1993:313) and could be evaluated through a Facilitator Knowledge test. Such a test would be more sensitive in discriminating between facilitators with less experience. Facilitator Knowledge scores should correlate positively

with the measures of experience, training, attitudes, personality and organizational support, as well as other outcome measures.

Skill-Based Learning Outcomes. Kraiger (1993) describes this category of outcomes as the development of technical or motor skills and is frequently measured by observing trainee performance in role plays or actual job behaviors. Theorists have identified three definable stages of skill development: (a) initial skill acquisition, (b) skill compilation, and (c) skill automaticity. Initial skill acquisition occurs when trainees make the transition from knowledge that is declarative (merely verbal) to knowledge that is procedural (the reproduction of trained behaviors). With continued practice the trainee reaches the compilation stage, characterized by faster, more error-free performance; discrete steps are integrated into a single act. As the name implies, performance at the automaticity stage is nearly automatic or unconscious; additionally, trainees are able to perform multiple tasks simultaneously (Kraiger et al., 1993:317).

Evaluation of skill-based learning outcomes can be accomplished through observation of the trainee while he is performing the target task, however this method is cost and time intensive. Typically, training classes like the Wright-Patt facilitator course assess initial skill acquisition through work shops and role playing sessions; instructors observe and spot correct trainees performing the target skill. Assessment of later stages of skill acquisition can be achieved by seeking evidence of compilation and automaticity. One of the characteristics of skill compilation is the capacity to modify and generalize learned behaviors to new task situations (Kraiger et al., 1993:317). If trainees report use of skills in situations beyond those specifically trained, they would be showing evidence of

skill compilation. Skill-based evaluation instruments such as proficiency measures or self-rated performance measures should be written to provide evidence of initial skill acquisition and mastery beyond initial levels.

Affective Learning Outcomes. Gagne (1984) included attitudes as an outcome of learning, since attitudes can determine behavior or performance and there is evidence that attitudes can be changed. He defined an attitude as an internal state that influences the choice of a personal action. Kraiger et al. (1993) expands this definition to include motivational and affective outcomes, because these processes also occur internally and do result in behavioral changes (Kraiger et al., 1993:318). Training researchers have often collected what they call reaction measures: how well the trainees liked the training program, how well was it organized, and whether trainees found it useful (Kraiger et al., 1993:319). Such measures may provide feedback on the quality of the training, however they do not directly measure individual learning. Kraiger et al. (1993) define affectively based measures of training evaluation as variables measuring attitudes, motivation, and goals that are relevant to the objectives of the training program; they further state, measures of attitudes should indicate the direction (agree or disagree) and strength of the reaction to an object (Kraiger et al., 1993:319).

Role Ambiguity. An employee experiences Role Ambiguity when he or she does not know what behavior is expected in one's job (Beehr et al., 1976:42). Both classical organization theory and role theory explain Role Ambiguity. Organizational theory states that every position in a formal organizational structure should have specific tasks or responsibilities; if employees are unaware of their position or responsibilities, they

will be indecisive and rely on trial and error to meet their supervisor's expectations (Rizzo et al., 1970:151). Role theory predicts ambiguity from lack of information about position will result in coping behavior: attempts to solve the problem and avoid the source of stress; or use of defense mechanisms that distort reality (Rizzo et al., 1970:151). Role Ambiguity increases dissatisfaction, anxiety and reality distortion resulting in a loss of performance effectiveness (Rizzo et al., 1970:151). This research indicates Role Ambiguity should be negatively correlated with skill-based measures of work outcomes or self-rated performance and measures of role satisfaction. Additionally, these studies suggest that measures of attitudinal factors involving desires or expectations may also decline with rising levels of Role Ambiguity.

Sense of Competence. According to Steel et al. (1989), Sense of Competence is the collection of skills and abilities contributing to successful work or occupational performance and is considered an excellent predictor of task performance. It is important to note, the term does not refer to actual competence, but to feelings or confidence the individual has in their ability to master organizational and work settings (Wagner and Morse, 1975:451). This affective measure should correlate highly with other measures of satisfaction, performance and effectiveness; Sense of Competence measures are also expected to be positively correlated with performance related measures such as work outcomes (recognition, promotions, increased responsibility) or personal outcomes (skills and abilities gained).

Role Satisfaction. Many researchers support the psychological expectancy theory suggesting that attitudes (e.g., satisfaction) are related to behavior

(e.g., performance); the psychological literature does provide some support for a positive correlation between job satisfaction and job performance (Gatian, 1994:119). A study by Gatian (1994) of direct and indirect information system users found strong support for a positive relationship between satisfaction and behavior; the study found intercorrelations between satisfaction and performance on a decision task to be .64 for direct users and .81 for indirect users. We expect to find similar relationships between measures of role satisfaction and other performance related outcome measures.

Training Objectives

To be considered effective, a course must teach the right skills. Facilitators must possess a broad range of inter-personal and leadership skills, before they can be considered effective. The Wright-Patt Campus provides a list of training objectives in their course outline: 1) Process Observation/Intervention Skills; 2) Personal Impact on Others; 3) Understanding Personality Differences; 4) Coaching; 5) Effective Feedback; 6) Presenting and Application of Quality Tools.

Facilitation experts Deal (1995) and Rees (1991) both describe skills needed for effective facilitation. Deal views the facilitator as both a team coach and consultant; her list of necessary skills includes: use of group dynamics, project management, problem solving, use of quality tools, active listening, questioning techniques, observation techniques, and interpersonal communication (Deal, 1995:185). Rees describes a similar role of leader-facilitator and expounds on some of the things skilled facilitators do, including: listens actively, encourages participation, manages group processes, taps group

creativity, builds consensus, organizes and records group ideas, provides content when needed (Rees, 1991:86). Although each author views the role of facilitator from a slightly different perspective, they clearly agree on skills considered important. It is conceivable that an effective facilitator might not possess all the skills mentioned, however these skills provide an excellent target list for facilitator training programs. Effective facilitator training programs should aim to impart a critical mass of these skills to their trainees. A comparison of Wright-Patt Campus objectives, training materials, and course descriptions with Deal and Rees' main areas of emphasis indicates that the facilitation training course covers most of the same skills. Thus, we can conclude that the Wright-Patt Campus has selected the right group of skills to teach their students. Performance measurements used in this study should be based on this group of target skills.

Experience Factors. Measures of experience are all demographic characteristics; this study is interested in examining the influence on outcome measures of many different kinds of experience, such as facilitation experience, Group Experience, numbers of meetings, wok experience, grade, and age. In general, consistent with Kraiger et al. (1993), the skill-based measures, measures of job satisfaction, and sense of competence are expected to be positively correlated with of all measures of experience; experience is expected to improve facilitator effectiveness.

Training Factors. This study is interested in how training factors impact outcome measures. These factors include: whether the trainee has taken one or both the facilitator classes available (basic and advanced); any additional TQM or facilitation-related training courses the trainee may have taken; level of education; and time since

course completion. To be consistent with Kraiger et al., (1993) skill-based measures should be positively correlated with increased depth of training, additional training and advanced education; these outcome measures are likely to be negatively correlated with increasing time since training.

Situational Factors. Organizational support is a situational factor that measures whether an employee perceives the teams and organizations he or she works with, supports his or her efforts. Eisenberger, Fasolo, and Davis-LaMastro (1990) advocate a social exchange view of commitment that suggests employees' perceptions of organizational support results in feelings of obligation to the employer, which in turn enhances employee's work behavior. Their study involved employees in six occupations and found positive relationships between perceived organizational support and a measure of performance; the average correlation, aggregated across occupations, was reported to be .33 ($p < .001$) (Eisenberger et al., 1990:54). Scales used in this study should be designed to capture this perception of perceived organizational support. The skill-based measures should be positively correlated with perceived organizational support.

Personality Factors. The validity of using personality measures as indicators or predictors of job performance has recently received much interest in the psychological literature (Barrick and Mount, 1993:111). This revival of interest is largely due to the recent emergence of the five-factor structure of personality (Digman, 1990) and recent evidence linking certain personality constructs as predictors of important job-related criteria (Barrick and Mount, 1991; Hough et al., 1990). This well-accepted personality structure, referred to by personality theorists as the Big Five, is supported by numerous

investigations encompassing different theoretical frameworks, instruments, samples, and rating sources (see Digman, 1990; Barrick and Mount, 1991; Goldberg, 1990; McCrae and Costa, 1985 and 1989; Norman, 1963, for more information).

The five personality factors are extroversion, agreeableness, conscientiousness, neuroticism, and openness to experience. This study is only concerned with those traits that have previously been found to be associated with performance outcomes: extroversion, agreeableness, and conscientiousness. The trait descriptions that follow are those provided by McCrae and Costa (1985 and 1989). Extroversion is typically associated with sociability; extroverts do like people and prefer large groups, but they are also known to be assertive, active and talkative. The prototypical extrovert is the upbeat, energetic, and optimistic salesperson type. Introverts tend to be reserved and independent, preferring to be alone. Agreeableness is also an interpersonal tendency. The agreeable person is altruistic, sympathetic, good-natured, and eager to help; the disagreeable person is egocentric, skeptical, and competitive (rather than cooperative). Conscientiousness is based on individual differences in the tendency to plan, organize, and carry out tasks. Individuals high in conscientiousness are strong-willed, reliable, purposeful, and determined. Individuals low in conscientiousness tend to be lackadaisical toward goals.

A study of 146 managers conducted by Barrick and Mount (1993) found that two dimensions of personality were significantly related to job performance: conscientiousness and extroversion. This study was principally interested in investigating the role autonomy has in moderating the relationship between personality dimensions and job performance.

Autonomy is a measure of employee independence; low autonomy jobs are closely supervised, highly structured, are machine-paced, and provide little opportunity for individual difference to be expressed; in contrast, high autonomy jobs receive little supervision, have very little structure, are individually paced, and allow more expression of individual differences (Barrick and Mount, 1993:112). The study noted the validity of conscientiousness and extroversion was greater for managers in high autonomy jobs, managers with higher scores in these constructs performed better in high autonomy jobs. The study also found that managers with low agreeableness scores performed better in jobs with high autonomy compared with managers in low autonomy jobs (Barrick and Mount, 1993:111). These findings are of interest to us, because facilitation is expected to be a highly autonomous job. A meta-analytic study of personality and job performance findings conducted by Tett, Jackson, and Rothstein (1991) also found significant correlations between *Big Five* factors and performance (Extroversion = .16, Agreeableness = .33, and Conscientiousness = .18). Our study expects to find similar relationships between personality and job performance.

Attitudinal Factors. This study is interested in the influence attitudes have on outcome measures. Attitude measures capture the trainees' desires and expectations regarding involvement in facilitation activities, e.g. the trainees' desire to spend time facilitating or the number of different groups the trainee expects to facilitate in the next year. Measures of this type could be called attitudinal outcomes, because they measure trainee changes in desire or expectation about future involvement with facilitation as an

outcome of facilitation training. Attitudinal factors are expected to be positively correlated with all the outcome variables.

Variable Relationships Found in Previous Studies: Our Model for Effective Facilitator Training

Our facilitator evaluation study relies on a broad base of research data gathered by previous studies and reported in the management and scientific literature. These studies provide a basis for our training model by supplying evidence of relationships known to exist between individual factors (experience, training, attitudinal, situational, and personality) and the training outcomes. Figure 2 shows how these factors are expected to contribute to facilitator effectiveness. The influence factors are shown on the left side of Figure 2; the outcomes of training are shown on the right hand side. The model illustrates how a factor's contributions can be assessed by outcome scales, shown on the right hand side of Figure 2, designed to measure each outcome of facilitator training.

The arrows in Figure 2 show which outcome measures each factor grouping is expected to primarily influence. Experience factors are primarily expected to influence cognitive and skill-based outcomes. Training factors are expected to influence cognitive, skill-based, and attitudinal outcomes. Organizational support is expected to influence skill-based, affective, personal, and attitudinal outcomes. Personality factors should exert their primary influence over skill-based and affective outcomes. This study will attempt to confirm the relationships shown.

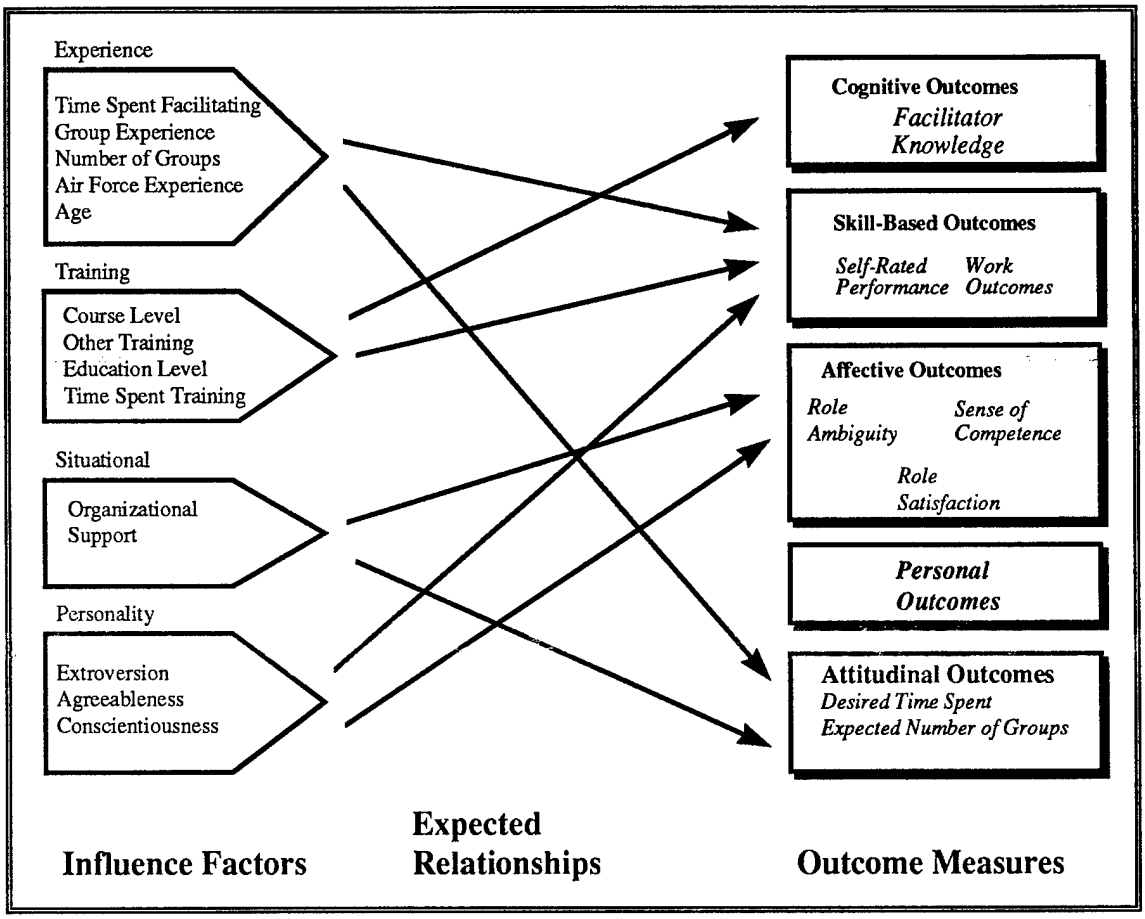


Figure 2. Model for Effective Facilitator Training Evaluation

III. Method

Prior research suggests that training effectiveness can be assessed by measuring outcomes in four areas -- cognitive, skill-based, affective, and user satisfaction. These outcomes were measured in this study by developing and adapting scales for each area. This chapter describes how these outcomes were developed and applied to the subject population.

Sample and Procedure

The initial target sample was a total of 350 individuals who attended the facilitator training course over the past two years. Subjects were sent a 113 item Facilitator Training Course Evaluation Survey (see Appendix A) through base distribution, using contact information provided by the Wright-Patt Campus and asked to provide the information on a voluntary basis. Individual responses were kept confidential. Subsequent inquiries and returns revealed that 103 members of the target sample were not available for participation because they had retired, moved, or left government service, reducing the subject pool to 247. A total of 162 participants responded to the survey (66% response rate). Ninety-five of the respondents (59%) were men and sixty-six were women (41%); one respondent declined to reveal his/her sex. The average respondent was between 25 and 34 years old, with over 11 years of government service; the sample was approximately 31% military and 69% civilian.

Preliminary Analysis

Preliminary analysis was performed to determine the effect of missing values on scale items. Less than 3 percent of the total possible responses were classified as missing values. Missing values were substituted with average scores of available items if the respondent completed at least 70% of the scale items. Mean scores, standard deviations, minimum scores, maximum scores for each scale were calculated for the whole sample. The internal consistency of each scale was estimated with Cronbach's Alpha.

The Instrument

Table 1 provides a summary of the types of data collected by the survey instrument created for this study and briefly describes each variable. Each scale and variable will be described in greater detail below.

Cognitive Outcomes. Cognitive outcomes were assessed with a 28 item Facilitator Knowledge test developed with the help of two Wright-Patterson Campus Facilitator course instructors. The test was designed to be suitable for use as a final examination for the course, although tests are not given in the facilitation courses. The test has been judged by the Wright-Patt Campus facilitation experts as having good content validity for measuring knowledge of course materials (Cronbach's alpha = .72, N = 159). Sample items include: "The more a facilitator knows about the subject the team is working on, the more effective he/she will be," and "A facilitator cannot remain silent and still intervene effectively." All items required true/false responses.

Table 1. Summary of Data Types and Variable Descriptions

Type of Data	Variable Description
Criterion Measures:	Personal Outcomes of training
	Work Outcomes of training
	Self-Rated Performance as a facilitator
Biographical Data:	Number of times facilitator met with each group in preceding 12 months
	The number of groups the trainee expects to facilitate in the next 12 months
	Percentage of time spent on facilitator work
	Percentage of time desired to be spent on facilitator work
	Number of years trainee has worked for the Air Force
	Age
	Race
	Sex
	Highest educational level
	Number of months since attending Training
	Grade: numerical equivalent of military rank or civilian grade
	Other related courses taken
	Course Level (advanced or basic)
	Group Experience: number of TQ related groups worked with
	Organizational Support
Test results:	# of Correct Facilitator Knowledge questions
Attitude Measures:	Sense of Competence
	Role Ambiguity
	Role Satisfaction
Personality Measures:	Extroversion
	Agreeableness
	Conscientiousness

Skill-based Outcomes. Skill-based outcomes were assessed through two scales measuring: Self-Rated Performance (see Appendix A, questions 78-85) and Work Outcomes (see Appendix A, questions 72-75). Items are based on skills and characteristics determined to be critical for the conduct of effective facilitation; these

skills and characteristics were gathered from the literature and were evaluated during a preliminary study (Rehg, 1995).

Self-Rated Performance. Self-Rated Performance (Cronbach's alpha = .90, N = 125) was measured using eight statements rated on a seven-point Likert scale; answers ranged from "1= Extremely Ineffective to 7 = Extremely Effective." The items asked the subject to rate himself or herself on skills considered by experts to be important to effective facilitation. Representative items include: "When it comes to helping people solve problems, I would rate my performance as _____," "I would rate my overall expertise as a facilitator as _____," and "My skills in keeping the group on track are _____."

Work Outcomes. Work Outcomes (Cronbach's alpha = .75, N = 157) was measured using four statements rated on a five-point Likert scale; answers ranged from "1= Strongly Disagree to 5 = Strongly Agree." The items were designed to measure specific work outcomes or benefits resulting from facilitation training. Sample items include: "The things I learned in facilitator training have helped me do other work better," and "My facilitator training seems to be helping my chances for promotion."

Affective Outcomes. Affective outcomes were measured through three scales: Role Ambiguity, Sense of Competence, and Role Satisfaction.

Role Ambiguity. Role Ambiguity (Cronbach's alpha =.79, N = 144) was measured using four items were adapted from Rizzo et al. (1970) and Beehr et al. (1976) to measure the affective outcome Role Ambiguity (see Appendix A, questions 59-62);

they reflect: 1) predictability of the outcome or responses to one's behavior on the job; or 2) the clarity or existence of guides, directives or policies in the workplace (Rizzo et al., 1970:155). Questions were chosen and adapted to measure facilitator-related Role Ambiguity and general work-related Role Ambiguity. Statements were rated on a five-point Likert scale with answers ranging from "1= Strongly Disagree to 5 = Strongly Agree". A high Role Ambiguity score indicates low Role Ambiguity. Sample items include: "My responsibilities as a facilitator are very clear and specific," and "I know what I am supposed to do as a facilitator."

Sense of Competence. Sense of Competence (Cronbach's alpha = 0.82, N = 144) was measured using thirteen items (see Appendix A, questions 46-58) chosen based on factor loadings reported in an earlier study (Wagner and Morse, 1975). Statements were rated on a five-point Likert scale with answers ranging from "1= Strongly Disagree to 5 = Strongly Agree." The items were adapted for this study to capture the trainee's Sense of Competence about facilitation. Representative items include: "Facilitating offers me a chance to test myself and my abilities," "Even though facilitating could be rewarding, I am frustrated and find motivation continuing only because of my paycheck," "No one around here knows how to facilitate better than I do" and "When it comes to facilitation, if anyone can find the answer, I'm the one."

Satisfaction. Role Satisfaction (Cronbach's alpha = .81, N = 141) was assessed through a five-question satisfaction scale developed for this study. The items are patterned after the Job Diagnostic Survey (JDS) scale of general satisfaction (Hackman and Oldham, 1980:284) and measure satisfaction with the role of the facilitator.

Statements were rated on a five-point Likert scale with answers ranging from "1= Strongly Disagree to 5 = Strongly Agree." Sample items include: "I am very pleased with the kind of work I do as a facilitator," "Overall, I am happy to be a facilitator," and "The people I work with as a facilitator are very pleasant."

Personal Outcomes. Personal Outcomes (Appendix A, questions 63-66) of facilitator training (Cronbach's alpha = .74, N = 160) were measured using four statements rated on a five-point Likert scale; the answers ranged from "1= Strongly Disagree to 5 = Strongly Agree." The items are intended to capture personal benefits or outcomes of training. Sample items include: "Facilitator training did a lot to improve my interpersonal skills," and "My understanding of TQ (Total Quality) is greater because of my facilitator training."

Personality Variables. Training outcome measures are believed to be influenced by personality. These effects were assessed through three personality measures: Extroversion (Cronbach's alpha = .81, N = 162), Agreeableness (N = 162, Cronbach's alpha = 0.73), and Conscientiousness (N = 162, Cronbach's alpha = .82). These variables were measured using three scales from Costa and McCrae's NEO Five-Factor Inventory (Costa and McCrae, 1992). The NEO FFI is the shorter version of the more comprehensive NEO PI-R and is considered to be useful for measuring normal peoples' traits when general information about personality is sufficient (Costa and McCrae, 1992). The right to use these copyrighted scales was purchased from Psychological Assessment Resources, Inc., for this study. Each scale consists of 12 statements reflecting one of the

three personality constructs. Statements were rated on a five-point Likert scale with answers ranging from "1= Strongly Disagree to 5 = Strongly Agree."

Organizational Support. Organizational Support (Cronbach's alpha = 0.67, N = 150) is a measure of perceived institutional support for facilitation and TQ using two statements rated on a five-point Likert scale ranging from "1= Strongly Disagree to 5 = Strongly Agree." The two items are: "The teams I work with strongly support TQ" and "The organizations I work with go out of their way to support the facilitation process." The items are adapted from a *Survey of Perceived Organizational Support* (Eisenberger, Huntington, Hutchison, Sowa; 1986:500).

Experience Factors. Prior work and facilitation-related experience factors were captured using six variables: Time Spent Facilitating, Group Experience, Number of Group Meetings, Air Force Experience, Grade, and Age. Time Spent Facilitating was measured by asking trainees how much time they spent on facilitator work. Group Experience consists of the number of different TQ-related groups the trainee has worked with in the past 12 months. Number of Groups consists of the number of times trainees, who were active facilitators, met with each facilitation group. Air Force Experience is the number of years the trainee has worked for the Air Force. Grade consists of number assigned to each trainee, based on military rank or civilian grade, indicating relative position in the management structure (see Appendix B). Age is captured as one of five sequential age ranges.

Training Factors. The study collected information on four training related factors that are expected to have an impact on training outcomes: Course Level, Other Training, Education Level, and Time Since Training. Wright-Patt Campus has two facilitator training courses: basic and advanced; all advanced course students have completed the basic course and must be actively involved in facilitation. Course Level is indicated by scoring a 1 for basic course graduates and a 2 for advanced course graduates. Other Training is a count of additional TQ and facilitation related training courses taken by the trainee, e.g. Team Training or Metrics courses. Education Level is captured in question 9: What is the highest educational level you have completed? Time Since Training recognizes the impact the passage of time has on training utility and is the number of months that have passed since the trainee took their last facilitation course at Wright-Patt Campus (basic or advanced).

IV. Data Description, Analysis and Discussion

This chapter describes the results obtained in the analysis conducted on the outcomes of training and presents a model of effective facilitator training.

Variable Intercorrelations

Table 2 shows the Pearson intercorrelation coefficients of the three outcome variable groupings --Cognitive, Skill-Based, and Affective with five factor groupings -- Experience, Training, Attitudinal, Moderator and Outcome. Additionally, Table 2 reports mean scores and standard deviations for all factors. Table 3 provides a complete listing of all variable intercorrelations.

Cognitive Outcomes. According to the literature, effective training should result in high cognitive outcomes. Our measure of cognitive outcomes is Facilitator Knowledge, a test of knowledge gained during the facilitation course. The Wright-Patt Campus facilitator course does not administer a final exam, however most courses consider a score of 70% or higher to be a passing grade. Table 2 indicates the mean Facilitator Knowledge score, number of correct responses, was 23.4 with a standard deviation of 2.8, indicating a mean score of over 83%. The Histogram of Facilitator Knowledge Test Scores, shown in Figure 3, further illustrates the skewness of the grade distribution towards the high end; 145 students scored 20 or better (>70%) for a 92% pass rate. This high pass rate is impressive when considering that some students are being tested as many as two years

after taking the class. These results provide strong evidence of an effective facilitator training program supporting the view that effective training increases cognitive outcomes.

Table 2. Intercorrelation Coefficients Between Influence Factors and Outcomes of Facilitator Training

			Cognitive Outcomes:	Skill-Based Outcomes:		Affective Outcomes:			Personal Outcomes:
Influence Factors	Mean	Std. Dev.	Facilitator Knowledge	Self-Rated Performance	Work Outcomes	Role Ambiguity	Sense of Competence	Role Satisfaction	Personal Outcomes
Experience Factors									
Time Spent Facilitating	1.18	0.76	.20**	.15*	.33**	.24**	.13	.36**	.22**
Group Experience	3.38	5.45	.18*	.18*	.37**	.14	.17*	.39**	.21**
# of Group Meetings	1.80	1.83	.12	.09	.32**	.07	.10	.26**	.26**
Air Force Experience	3.96	1.00	-.01	.05	-.03	-.03	.04	.01	.07
Grade	11.29	2.90	.30**	.01	.02	-.08	-.14	-.15*	-.12
Age	3.24	0.98	-.15*	.08	-.08	.10	.11	.08	.05
Training Factors									
Course Level	1.20	0.40	.06	.07	.23**	.29**	.23**	.21**	.36**
Other Training	2.15	1.78	.21**	.10	.13	.16*	.05	.14	.16*
Education Level	4.92	1.28	.29**	-.06	.01	.11	.05	-.02	-.05
Time Since Training	13.77	7.13	-.20**	.02	-.08	.10	.12	-.04	.03
Attitudinal Factors									
Desired Time Spent	1.98	1.24	.31**	.22**	.35**	.35**	.51**	.42**	.35**
Expected # Of Groups	1.77	1.11	.30**	.13	.34**	.17*	.14*	.35**	.16*
Personality Factors:									
Extroversion	3.57	0.49	-.18*	.32**	.00	.28**	.32**	.26**	.08
Agreeableness	3.86	0.41	.07	.19*	.24**	.18*	.21**	.23**	.16*
Conscientiousness	3.98	0.48	-.20**	.27**	.11	.30**	.34**	.16*	.13
Situational Factors									
Organizational Support	2.92	0.84	-.06	.24**	.23**	.34**	.22**	.29**	.09
N = 123-162			* p < .05		**p <.01	one-tailed			

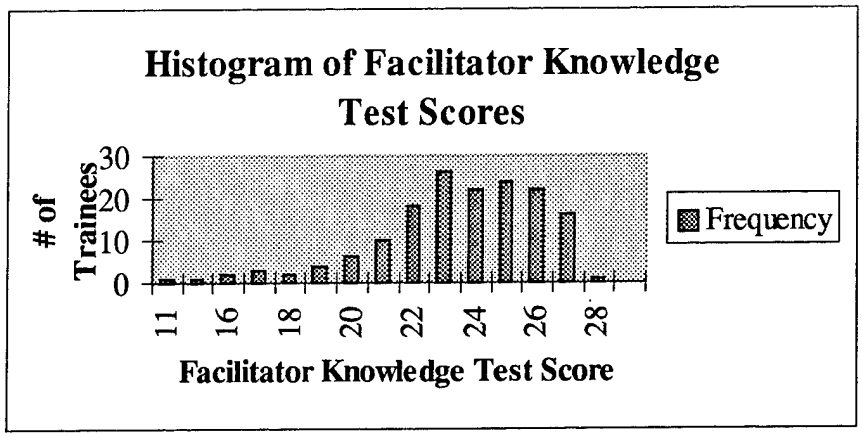


Figure 3. Histogram of Facilitator Knowledge Test Scores

Additionally, Facilitator Knowledge is expected to be positively correlated with experience-related factors. Table 2 shows that Facilitator Knowledge was significantly correlated with 4 out of the 6 experience factors. Significant positive correlations were found for Time Spent Facilitating ($r = .20$, $p < .01$), Group Experience 9 ($r = .18$, $p < .05$), and Grade ($r = .30$, $p < .01$); Age was negatively correlated with Facilitator Knowledge ($r = -.15$, $p < .05$). These results suggest that general work and life experience do not contribute to higher Facilitator Knowledge scores, otherwise Age and Air Force Experience would also be positively correlated with Facilitator Knowledge. Relevant experiences such as those that comprise Time Spent Facilitating, Group Experience and Grade, do seem to contribute to higher Facilitator Knowledge scores. Evidently, trainees who were already active in facilitation, held higher management positions, and engaged in other TQ-related group activities were more likely to do well on the Facilitator Knowledge test. These findings support our model for effective facilitator training: relevant experience increases cognitive outcomes.

Table 3. Complete Variable Intercorrelations

#	Variable	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22
1	Facilitator Knowledge	~																					
2	Self-Rated Performance	.05	~																				
3	Work Outcomes	.23**	.04	~																			
4	Role Ambiguity	.11	.33**	.29**	~																		
5	Sense of Competence	.08	.46**	.40**	.47**	~																	
6	Role Satisfaction	.24**	.52**	.47**	.44**	.62**	~																
7	Personal Outcomes	.14*	-.06	.66**	.22**	.30**	.31**	~															
8	Time Spent Facilitating	.20**	.15*	.33**	.24**	.13	.36**	.21**	~														
9	Group Experience	.18*	.18*	.37**	.14	.17*	.39**	.21**	.37**	~													
10	Course Level	.06	.07	.23**	.29**	.23**	.21**	.36**	.21**	.25**	~												
11	Other Training	.21**	.10	.13	.16*	.05	.14	.16*	.16*	.23**	.46**	~											
12	Education Level	.29**	-.01	.01	.11	.05	-.02	-.05	-.02	.03	-.03	.02	~										
13	Desired Time Spent	.31**	.22**	.35**	.35**	.51**	.42**	.35**	.47**	.16*	.28**	.15*	-.04	~									
14	Expected Number of Groups	.30**	.13	.34**	.17*	.14*	.35**	.16*	.63**	.42**	.08	.20**	.05	.44**	~								
15	Extroversion	-.18*	.32**	.00	.28**	.32**	.26**	.08	.09	.12	.10	.15*	-.14*	.11	.04	~							
16	Agreeableness	.07	.19*	.24**	.18*	.21**	.23**	.16*	.15*	.16*	.07	.19*	-.03	.09	.13	.40**	~						
17	Conscientiousness	-.20**	.27**	.11	.30**	.34**	.16*	.13	.12	.01	.09	.06	.05	.09	.08	.28**	.17*	~					
18	Organizational Support	-.06	.24**	.23**	.35**	.22**	.29**	.09	.12	-.02	.04	-.01	.00	.09	.10	.23**	.23**	.21**	~				
19	Grade	.30**	.01	.02	-.08	-.14	-.15*	-.12	-.08	.01	.03	.06	.60**	-.13	.07	-.11	.04	-.11	-.01	~			
20	Air Force Experience	-.01	.05	-.03	-.03	.04	.01	.07	-.08	.00	.06	.03	.08	-.01	.02	.01	.09	.11	.16*	.30**	~		
21	Age	-.15*	.10	-.08	.10	.11	.08	.05	-.12	-.05	.16*	.00	-.03	.01	-.07	.15*	.05	.10	.26**	.14	.55**	~	
23	Time Spent Facilitating	-.20**	.02	-.08	.10	.12	-.03	.03	-.11	.03	.32**	.07	-.02	-.06	-.24**	.18*	-.02	.15*	-.08	-.02	.06	.16*	~
23	# of Group Meetings	.12	.09	.32**	.07	.10	.26**	.26**	.38**	.22**	.23**	.15*	-.06	.27**	.39**	.01	.11	.11	.04	.00	.03	-.01	.10

Notes: N = 123 - 162. * $p < .05$ ** $p < .01$ one-tailed

Furthermore, Facilitator Knowledge scores would be expected to rise with increasing amounts of training. Table 2 shows significant correlations between Facilitator Knowledge and 3 out of 4 of the training factors. Significant positive correlations ($p < .01$) were found with Other Training ($r = .21$) and Education Level ($r = .29$). As expected, Time Since Training was negatively correlated ($r = -.20$) with Facilitator Knowledge, indicating declining scores as Time Since Training increases; intuitively, one would expect to see declining scores over time unless the concepts were used or refreshed through additional training. Positive correlations with Other Training and Education Level support to our model of effective training: training and education increase cognitive outcomes.

On the surface, the lack of a significant correlation between Facilitator Knowledge and Course Level ($r = .06$) may seem surprising, one would expect advanced training to be positively correlated with cognitive outcomes. However, one must remember that the Facilitator Knowledge test was designed to evaluate graduates of the Basic Facilitators course. If the advanced course did not teach the same concepts as the basic course, it would not be expected to significantly impact Facilitator Knowledge scores.

Attitudinal Factors would be expected to be positively correlated with Facilitator Knowledge scores. Both attitudinal factors included in this study showed significant positive correlations ($p < .01$) with Facilitator Knowledge scores (see Table 2). Desired Time Spent, a measure of desire to spend more time on facilitation work, was strongly correlated with Facilitator Knowledge ($r = .31$); this result suggests that effective training may increase desire to engage in the trained activity. Similarly, Expected Number of

Groups was also strongly correlated ($r = .30$, $p < .01$) with Facilitator Knowledge suggesting that higher cognitive outcomes result in an increased expectation to facilitate. These findings support our model of effective facilitator training: effective training increases desire and expectation to engage in facilitation.

Two of the three personality factors (see Table 2) showed significant correlations with Facilitator Knowledge: Extroversion ($r = -.18$, $p < .05$) and Conscientiousness ($r = -.20$, $p < .01$). These negative correlations were unexpected and defy reasonable explanation, generally these variables are positively correlated with skill-based outcomes (Barrick and Mount, 1993; Tett et al., 1991).

Self-Rated Performance. Table 2 shows that Self-Rated Performance was significantly correlated ($p < .05$) with only two of the experience factors: Time Spent Facilitating ($r = .15$) and Group Experience ($r = .18$). While these correlations do show that experience contributes to Self-Rated Performance, the contribution appears to be relatively minor. These findings are consistent with our model for effective facilitator training: experience increases Self-Rated Performance.

Although experience did have some impact, none of the four training factors (see Table 2) showed any significant correlation with Self-Rated Performance. These findings show that Course Level, Other Training, Education Level, and Time Since Training do not have a significant impact on Self-Rated Performance outcomes of training. These findings do not support our model for effective facilitator training.

Only one of the attitudinal factors was significantly correlated ($p < .01$) with Self-Rated Performance (see Table 2): Desired Time Spent ($r = .22$); Expected Number of Groups was not significant ($r = .13$, $p < .07$). These findings indicate that at least some attitudinal factors are associated with Self-Rated Performance and support the proposition that facilitator training: increased desire or expectation to engage in active facilitation results in greater Self-Rated Performance.

Table 2 shows that the personality and situational factors were all found to be significantly related to Self-Rated Performance: Extroversion ($r = .32$, $p < .01$), Agreeableness ($r = .19$, $p < .05$), Conscientiousness ($r = .24$, $p < .01$), and Organizational Support ($r = .24$, $p < .01$). These general relationships vary only slightly with each of the remaining outcomes of training (see Table 2): Role Ambiguity ($r = .28, .18, .30$, and $.34$ respectively), Sense of Competence ($r = .32, .21, .34$, and $.22$ respectively), and Role Satisfaction ($r = .26, .23, .16$, and $.29$ respectively). These results are consistent with our theoretical expectations, showing a significant relationship between our personality factors and various outcomes of training.

Work Outcomes. Work Outcomes would generally be expected to increase with work experience. Table 2 shows that 3 of 6 Experience factors are significantly ($p < .01$) positively correlated with Work Outcomes: Time Spent Facilitating ($r = .33$), Group Experience ($r = .37$) and Number of Group Meetings ($r = .32$). Each of these experience factors are directly relevant to facilitation work, while the three non-significantly correlated factors are more general indicators of experience (Air Force

Experience, Grade, and Age). This suggests relevant work experience increases Work Outcomes of facilitator training.

Although training would generally be expected to increase Work Outcomes, Table 2 shows that only one of the training factors, Course Level ($r = .23$, $p < .01$) was significantly correlated with Work Outcomes. This result is opposite of the Facilitator Knowledge correlations, where Course Level was not significantly correlated while the other three training factors were significantly correlated. These results suggest that knowledge gained during the Advanced Facilitator course is relevant to Work Outcomes, but not to Facilitator Knowledge outcomes, since Work Outcomes rise with increases in Course Level. This provides evidence that advanced training increases work-related outcomes.

Table 2 shows that both attitudinal factors are positively correlated with Work Outcomes ($p < .01$): Desired Time Spent ($r = .35$) and Expected Number of Groups ($r = .34$). These results are consistent with both intuition and expectations. As work conditions (Work Outcomes) improve, desire and expectation to do additional work increase (increases in greater Desired Time Spent and Expected Number of Groups). Our model for effective training would then assert: effective facilitator training improves Work Outcomes resulting in greater desire and expectation to engage in active facilitation.

As shown by Table 2, Work Outcomes are significantly correlated ($p < .01$) with one of the three personality factors and the one situational factor: Agreeableness ($r = .24$) and Organizational Support ($r = .23$). This finding is consistent with theoretical expectations; trainees who are high in Agreeableness are more likely to have higher

reported Work Outcomes and increases in perceived levels of Organizational Support, resulting in increased Work Outcomes of training.

Personal Outcomes. Intercorrelation results for Personal Outcomes were very similar to those of Work Outcomes; this is not surprising considering Table 2 shows that Personal Outcomes and Work Outcomes are strongly correlated with each other ($r = .66$, $p < .01$). Personal Outcomes would be expected to increase with work experience, though not as strongly as Work Outcomes. Table 2 shows that 3 of 6 Experience factors are significantly ($p < .01$) positively correlated with Personal Outcomes: Time Spent Facilitating ($r = .22$), Group Experience ($r = .21$) and Number of Group Meetings ($r = .26$). Although the correlations are not as strong as for Work Outcomes, the results show that experience factors relevant to the job of a facilitator increased the Personal Outcomes of training. These findings contribute to our model of effective facilitator training: relevant work experience increases Personal Outcomes of training.

Training Factors would also be expected to be positively correlated with Personal Outcomes of training. Two out of four of the training factors Course Level ($r = .36$, $p < .01$) and Other Training ($r = .16$, $p < .05$) were significantly correlated with Personal Outcomes. These results show even stronger effects than correlations of Work Outcomes with the training factors. The biggest difference is seen in Course Level, showing an increase from $r = .23$ for Work Outcomes to $r = .36$ for Personal Outcomes. Apparently, knowledge gained during the Advanced Facilitator course is even more relevant to Personal Outcomes than it was to Work Outcomes. These findings indicate that advanced

training increases Personal Outcomes of training. This result is consistent with our model for effective training: effective training increases Personal Outcomes of training.

Table 2 shows that both attitudinal factors are positively correlated with Personal Outcomes: Desired Time Spent ($r = .35$, $p < .01$) and Expected Number of Groups ($r = .16$. $p < .05$). These findings are consistent with our model for effective training and suggest: effective facilitator training improves Personal Outcomes of training, resulting in greater desire and expectation to engage in active facilitation.

As shown by Table 2, Personal Outcomes are significantly correlated with only one of the personality factors: Agreeableness ($r = .16$, $p < .05$). As with Work Outcomes this finding is consistent with theoretical expectations; trainees who are high in Agreeableness are more likely to have higher reported Personal Outcomes and increases in perceived levels of Organizational Support, resulting in increased Personal Outcomes.

Role Ambiguity. Role Ambiguity was found to be significantly correlated with only one of the experience factors (see Table 2): Time Spent Facilitating ($r = .24$, $p < .01$). Time Spent Facilitating is our strongest measure of facilitation experience, the previous result suggests that while general experience has little effect on Role Ambiguity, specific experience as a facilitator (Time Spent Facilitating) does serve to reduce Role Ambiguity.

Additional training should reduce Role Ambiguity; correspondingly, 2 of the 4 training factors in Table 2 show significant correlations with Role Ambiguity: Course Level ($r = .29$, $p < .01$) and Other Training ($r = .16$, $p < .05$). These findings show that

additional training does contribute significantly to reducing Role Ambiguity as an outcome of training. This is consistent with theoretical expectations and contributes to our model for effective facilitator training: effective training reduces Role Ambiguity.

Significant correlations (see Table 2) were found between Role Ambiguity and the two attitudinal factors: Desired Time Spent ($r = .35$, $p < .01$) and Expected Number of Groups ($r = .17$, $p < .05$). This makes good intuitive sense and is consistent with our model: lower Role Ambiguity results in greater desire to engage in active facilitation (Desired Time Spent) and increased expectation about the numbers of groups the trainee will be involved with (Expected Number of Groups).

Sense of Competence. Table 2 shows that Sense of Competence is significantly correlated with only one of the experience factors: Group Experience ($r = .17$, $p < .05$). This finding does support our model for effective facilitator training: experience increases Sense of Competence outcomes of facilitator training.

Sense of Competence is expected to increase with additional training. Table 2 reveals that Course Level is significantly correlated with Sense of Competence ($r = .23$, $p < .01$). Apparently, the additional training must be similar to the facilitator training, e.g. the Advanced Facilitator Course, before it can have a significant effect on Sense of Competence. This may explain why the Course Level correlation is significant, while correlations with Other Training and Education Level are not significant. This finding does support our model for effective facilitator training: advanced training increases Sense of Competence outcomes of facilitator training

Among the attitudinal factors shown in Table 2, Sense of Competence is very strongly correlated with Desired Time Spent ($r = .51$, $p < .01$) and is less strongly, correlated with Expected Number of Groups ($r = .14$, $p < .05$); both correlations are significant. These findings are similar to the relationships found between Role Ambiguity and the attitudinal factors, although the correlation between Sense of Competence and Desired Time Spent is much stronger. It seems obvious that higher Sense of Competence levels should result in a greater desire to engage in active facilitation (Desired Time Spent) and increased expectation about the number of groups trainees will be involved with (Expected Number of Groups); the trainee feels more competent about facilitating, so she does more facilitating. These findings are consistent with our model for effective facilitator training: effective training increases Sense of Competence, resulting in greater desire and expectation to engage actively in facilitation.

Role Satisfaction. When a trainee gains facilitation experience, the trainee's satisfaction with the role of the facilitator (Role Satisfaction) should increase. It comes as no surprise, then, that Role Satisfaction (see Table 2) is significantly ($p < .01$) and positively correlated with 3 out of the 6 experience factors: Time Spent Facilitating ($r = .36$), Group Experience ($r = .39$), and Number of Group Meetings ($r = .26$). As suggested earlier, Time Spent Facilitating, Group Experience, and Number of Group Meetings are more relevant to facilitation than the other three, more general, experience variables. These correlations indicate a strong relationship between satisfaction and relevant facilitation experience. Additionally, Role Satisfaction is negatively correlated with Grade ($r = -.15$, $p < .05$) this is the only significant negative correlation between

Grade and the seven outcome variables. These results support our model for effective facilitator training: relevant facilitation experience increases Role Satisfaction outcomes of training.

Correlations between training factors and Role Satisfaction (see Table 2) follow a trend similar to other outcome variables: Course Level ($r = .21, p < .01$) is significantly correlated, while Other Training ($r = .14, p < .07$) is not significantly correlated. This finding suggests the role of the advanced facilitation course is more important to Role Satisfaction than other less facilitation-related courses. This is consistent with theoretical expectations that advanced facilitation training increases Role Satisfaction.

Consistent with findings for other outcome variables, the two attitudinal factors in Table 2 are strongly correlated ($p < .01$) with Role Satisfaction: Desired Time Spent ($r = .42$) and Expected Number of Groups ($r = .35$). Again, intuition would strongly suggest that increased satisfaction with an activity would likely result in greater desire to engage in the activity from which the satisfaction was derived. These findings are consistent with the view that effective training increases Role Satisfaction.

Regression Analysis

Hierarchical regression procedures (Cohen and Cohen, 1983) were used to determine the unique contribution variables selected from the experience, training, attitudinal, and personality factors had on the dependent variables Facilitator Knowledge, Self-Rated Performance, and Sense of Competence. Table 4 shows which variables chosen based on theoretical expectations: those expected to have the strongest influence

on each training outcome. Each variable was introduced into the regression equation sequentially.

Table 4. Variables Used in Hierarchical Regressions

Dependent Outcome Variables	Independent Factor Variables
Facilitator Knowledge	Other Training
	Education Level
	Desired Time Spent
Self-Rated Performance	Time Spent Facilitating
	Extroversion
	Conscientiousness
Sense of Competence	Desired Time Spent
	Extroversion
	Conscientiousness

The usefulness of each variable in predicting the dependent variable is indicated by the size of the increase or decrease in R^2, the multiple coefficient of correlation, generated by the regression process (McClave and Benson, 1994). The importance of each selected variable set is signified by ΔR^2 (change in R^2), the greater the change the more important the addition of the selected variable the dependent variable; R^2 will vary in size from 0 to 1.0. A probability value (Significant F), calculated for each regression model, tests the contribution of each independent variable on the amount of variance explained in the dependent variable. Significance values (shown in the tables as Sig F) less than .05 indicate the new set of independent variables contributes significantly to the dependent variable of interest; this relationship is true whether the independent variable is being added or removed from the regression equation.

Facilitator Knowledge. Table 5 shows that all three of the chosen independent variables (Other Training, Education Level, and Desired Time Spent) account for significant variance in Facilitator Knowledge. Other Training uniquely accounted for approximately 5 percent (Model 2, $\Delta R^2 = .05$, $p < .03$), Education Level uniquely accounted for approximately 6 percent (Model 3, $\Delta R^2 = -.06$, $p < .01$), and Desired Time Spent uniquely accounted for approximately 7 percent (Model 5, $\Delta R^2 = -.07$, $p < .01$) of the variance in Facilitator Knowledge. Other Training, Education Level, and Desired Time Spent together account for approximately 18 percent of the variation in Facilitator Knowledge. This suggests that facilitator trainees who have attended other TQM related training, have completed higher levels of education, and desire to spend time facilitating will score higher on the Facilitator Knowledge test. Supervisors faced with limited training allocations should consider these factors when selecting facilitator trainees.

Table 5. Hierarchical Regressions For Facilitator Knowledge

DEPENDENT VARIABLE: Facilitator Knowledge				
Model	Independent	R^2	ΔR^2	Sig F change
1	Education Level and Desired Time Spent	.14	-	-
2	add Other Training, Education Level and Desired Time Spent remain	.19	.05	.02
3	remove Education Level, Desired Time Spent and Other Training remain	.13	-.06	.01
4	add Education Level	.19	.06	.01
5	remove Desired Time Spent, Other Training and Education Level remain	.11	-.07	.00

N = 123 -162

Self-Rated Performance. Table 6 shows that of the three independent variables (Time Spent Facilitating, Extroversion, and Conscientiousness) only Extroversion uniquely accounted for significant variance in Self-Rated Performance. Extroversion uniquely accounted for approximately 9 percent (Model 3, $\Delta R^2 = -.09$, $p < .01$) of the variance in Self-Rated Performance. All three independent variables (Time Spent Facilitating, Extroversion, and Conscientiousness) together account for (not uniquely) approximately 17 percent of the variance in Self-Rated Performance (Model 2, $R^2 = .17$). As expected, this suggests that trainees that are high in Extroversion will report higher levels of Self-Rated Performance; therefore, Extroversion could serve as a criteria for choosing facilitator training candidates.

Table 6. Hierarchical Regressions For Self-Rated Performance

DEPENDENT VARIABLE: Self-Rated Performance				
Model	Independent	R^2	ΔR^2	Sig F change
1	Extroversion and Conscientiousness	.16	-	-
2	add Time Spent Facilitating, Extroversion and Conscientiousness remain	.17	.02	.15
3	remove Extroversion, Time Spent Facilitating and Conscientiousness remain	.08	-.09	.00
4	add Extroversion	.17	.09	.00
5	remove Conscientiousness, Extroversion and Time Spent Facilitating remain	.15	-.02	.10

N = 123 -162

Sense of Competence. Table 7 shows that all three independent variables (Desired Time Spent, Extroversion, and Conscientiousness) account for significant variance in Sense of Competence. Desired Time Spent uniquely accounts for approximately 20 percent (Model 2, $\Delta R^2 = .20$, $p < .01$), Extroversion uniquely accounts for approximately 6 percent (Model 3, $\Delta R^2 = -.06$, $p < .01$), and Conscientiousness uniquely accounts for approximately 4 percent (Model 5, $\Delta R^2 = -.04$, $p < .02$) of the variation in Sense of Competence. Additionally, all three independent variables (Desired Time Spent, Extroversion, and Conscientiousness) together account for (not uniquely) approximately 37 percent of the variance in Sense of Competence (Model 2, $R^2 = .37$). Thus it is clear that extroversion, conscientiousness, and desire to spend time facilitating have a profound effect on trainee Sense of Competence about facilitation. These criteria should be considered when choosing candidates for facilitator training.

Table 7. Hierarchical Regressions For Sense of Competence

DEPENDENT VARIABLE: Sense of Competence				
Model	Independent	R^2	ΔR^2	Sig F change
1	Extroversion and Conscientiousness	.17	-	-
2	add Desired Time Spent, Extroversion and Conscientiousness remain	.37	.20	.00
3	remove Extroversion, Desired Time Spent and Conscientiousness remain	.31	-.06	.00
4	add Extroversion	.37	.06	.00
5	remove Conscientiousness, Extroversion and Desired Time Spent remain	.33	-.04	.01

N = 123 -162

V. Conclusions and Implications

Is the TQM Facilitator training provided by the Wright-Patt Campus effective?

The results support a conclusion that the Wright-Patt Campus does provide effective TQM facilitator training. We found the course was teaching the skills experts considered essential to conduct effective facilitation. Over 92% of course graduates obtained a passing score on a final exam judged to have good course content validity.

Table 2 demonstrates that Facilitator Knowledge scores were correlated with other performance and individual difference variables in a manner consistent with theoretical expectations. I found positive correlations with 4 out of 6 experience factors, 3 out of 4 training factors, and two attitudinal factors. Results of the hierarchical regression analysis were also consistent with theoretical expectations; three factors expected to influence Facilitator Knowledge, Other Training, Education Level, and Desired Time Spent accounted for approximately 18 percent of the variation in Facilitator Knowledge (see Table 5). Other Training uniquely accounted for approximately 5 percent (Model 2, $\Delta R^2 = .05$, $p < .03$), Education Level uniquely accounted for approximately 6 percent (Model 3, $\Delta R^2 = -.06$, $p < .01$), and Desired Time Spent uniquely accounted for approximately 7 percent (Model 5, $\Delta R^2 = -.07$, $p < .01$) of the variance in Facilitator Knowledge. These suggest that the Wright-Patt Campus provides effective facilitator training.

Table 2 also shows that personal and skill-based outcomes support an effective facilitator training conclusion. Work Outcomes were correlated with all three of the facilitation relevant experience factors; Course Level, the most facilitation relevant training factor; both attitudinal factors; and 2 of the 4 personality factors. Results for Personal Outcomes of training were similar, significant positive correlations were found with: all three of the facilitation relevant experience factors; two the most facilitation relevant training factors, Course Level and Other Training; both attitudinal factors; and one personality factor. Although results for Self-Rated Performance were not as strong, they do provide support the Model; significant positive correlations were found with: 2 of the 3 most facilitation relevant experience factors; 1 of the 2 attitudinal factors; all 3 of the personality factors; and the one situational factor.

The affective outcomes of facilitator training provide additional support to our conclusion. Role Ambiguity was significantly positively correlated ($R = .24$, $P < .01$) with Time Spent Facilitating, the most facilitation relevant experience factor. Role Ambiguity was also significantly positively correlated with: 2 of the 4 training factors; both the attitudinal factors; and all 4 of the moderating factors.

The most significant finding is the strong significant positive correlations between Course Level and the outcomes of training. Since Course Level distinguishes between trainees who have taken only the basic facilitation course and those who have taken both the basic and advanced facilitation courses, these results most clearly measure the effects of taking the advanced course. Table 2 shows that 5 of the 7 outcomes were significantly ($p < .01$) correlated, with correlation coefficients ranging from $R = .21$ to .36. Thus, we

have strong indications the advanced facilitator course improved work and personal outcomes, reduced Role Ambiguity, increased Sense of Competence and enhanced role satisfaction: strong indications of an effective course.

What can be done to make facilitators more effective?

This study identified several factors which contributed to improved outcomes of facilitator training-- experience, training, desire to facilitate, personality and organizational support.

Experience. Among the experience factors, Time Spent Facilitating and Group Experience appeared to have the strongest influence. Time Spent Facilitating was significantly positively correlated with 6 of the 7 outcome measures; correlation coefficients ranged from .15 ($p < .05$) for Self-Rated Performance to .36 ($p < .01$) for Role Satisfaction (see Table 2). Clearly, the best way to improve facilitator effectiveness is to spend time actively engaged in facilitation. Similarly, Group Experience showed significant positive correlations with 6 of the 7 outcome measures, with the seventh also showing a strong positive correlation; correlation coefficients ranged from .17 ($p < .05$) for Sense of Competence to .39 ($p < .01$) for Role Satisfaction. These findings show that even general TQM Group Experiences have a significant positive effect on training outcomes.

Training. Two training factors showed particularly significant impacts on outcome measures: Course Level and Other Training. Course Level was significantly positively correlated with 5 out of the 7 outcome measures; correlation coefficients

ranged from .21 ($p < .01$) for Role Satisfaction to .36 ($p < .01$) for Personal Outcomes. Reported results for Other Training (see Table 2) show that general TQM related training (not facilitation training) also significantly impacted outcome measures. Other Training was significantly correlated with 3 of the 7 outcome measures; correlation coefficients ranged from .16 ($p < .05$) for Role Ambiguity and Personal Outcomes to .21 ($p < .01$) for Facilitator Knowledge. Hierarchical set regressions showed that the training factors played a significant role in Facilitator Knowledge. Table 5 shows that Other Training uniquely accounted for approximately 5 percent (Model 2, $\Delta R^2 = .05$, $p < .03$), while Education Level uniquely accounted for approximately 6 percent (Model 3, $\Delta R^2 = -.06$, $p < .01$) of the variance in Facilitator Knowledge. These results suggest that advanced facilitator training, general TQM training and advanced education all improve facilitator effectiveness.

Desire To Facilitate. Desired Time Spent, one of the two attitudinal variables, captures trainee desire to increase time spent engaged in active facilitation. Table 2 shows this factor appears to have a profound effect on the outcomes of facilitator training. Desired Time Spent is significantly ($p < .01$) and positively correlated with all 7 of the outcome measures; correlation coefficients ranged from .22 for Self-Rated Performance to .51 for Sense of Competence. Additional support is provided by the hierarchical regression results, Table 5 shows Desired Time Spent uniquely accounts for approximately 7 percent (Model 5, $\Delta R^2 = -.07$, $p < .01$) of the variance in Facilitator Knowledge and Table 7 shows that Desired Time Spent uniquely accounts for approximately 20 percent (Model 2, $\Delta R^2 = .20$, $p < .01$) of the variation in Sense of Competence. These results

provide strong indications that attitude, particularly desire to facilitate, plays an important role in facilitator effectiveness.

Personality. Unlike experience and training, personality is not a factor over which we can exert much influence. However, should it become necessary to limit those who can attend facilitation training it is important to recognize the influence it may have on facilitator effectiveness. Extroversion is significantly positively correlated with 4 of the 7 outcome measures: Self-Rated Performance ($r = .32$, $p < .01$), Role Ambiguity ($r = .28$, $p < .01$), Sense of Competence ($r = .32$, $p < .01$), and Role Satisfaction ($r = .26$, $p < .01$). Hierarchical regression analysis results in Table 6 show that Extroversion uniquely accounted for approximately 9 percent (Model 3, $\Delta R^2 = -.09$, $p < .01$) of the variance in Self-Rated Performance, while results in Table 7 show that Extroversion uniquely accounts for approximately 6 percent (Model 3, $\Delta R^2 = -.06$, $p < .01$) of the variation in Sense of Competence. Agreeableness is significantly positively correlated with 6 of the 7 outcome measures: Self-Rated Performance ($r = .19$, $p < .05$), Work Outcomes ($r = .24$, $p < .01$), Role Ambiguity ($r = .18$, $p < .05$), Sense of Competence ($r = .21$, $p < .01$), and Role Satisfaction ($r = .23$, $p < .01$) and Personal Outcomes ($r = .16$, $p < .05$). Conscientiousness is significantly positively correlated with 4 of the 7 outcome measures: Self-Rated Performance ($r = .27$, $p < .01$), Role Ambiguity ($r = .30$, $p < .01$), Sense of Competence ($r = .34$, $p < .01$), and Role Satisfaction ($r = .16$, $p < .05$). Hierarchical regression analysis results in Table 7 show that Conscientiousness uniquely accounts for approximately 4 percent (Model 5, $\Delta R^2 = -.04$, $p < .02$) of the variation in Sense of Competence. These findings are consistent with previous studies that show personality

influences the outcomes of facilitator training (Barrick and Mount, 1993; Tett, Jackson, and Rothstein, 1991).

Organizational Support. Perhaps the most intriguing issue is the role organizational support plays in facilitator effectiveness, especially considering the large number of negative episodical reports the author received during this study. These reports essentially stated: my supervisor does not support TQM, or my boss does not let me facilitate. In this study organizational support is a measure of whether an employee perceives the teams and organizations he or she works with supports TQM or the facilitation process. Organizational Support was found to be significantly ($p < .01$) and positively correlated with 5 out of the 7 outcomes measures; correlation coefficients ranged from .22 for Sense of Competence to .34 for Role Ambiguity. While these results suggest that organizational support did influence the outcomes of facilitator training, further research is needed using a more extensive organizational support scale to determine the extent of this influence.

Implications

This study should aid The Wright-Patt Campus to assess the quality and content of the facilitator training course. Additionally, the study will aid The AFMC Quality Institute with effective selection and utilization of course trainees and over all administration of the AFMC Quality program. The course administrators should be assured that the course appears to be teaching the right set of skills and that the trainees appear to be learning the material. However, caution should be exercised; this study is preliminary and needs

further refinement. While the results strongly support a conclusion that the Wright-Patt Campus conducts effective facilitator training, further research is needed to strengthen the case. This study focused on only one the three primary customers of facilitator training. Additional research should focus on supervisor and facilitation group evaluations of facilitator effectiveness.

The five factors found to influence facilitator effectiveness -- experience, training, desire to facilitate, personality and organizational support -- should encourage supervisors to provide facilitation trainees increased opportunities to improve their effectiveness. These factors can also be used to establish a basis for selecting future candidates for facilitation training.

Appendix A: Facilitator Training Survey Instrument

WPAFB Campus/AFIT
Facilitator Training Evaluation
For Graduates of Facilitator Training

Description of the study: Our goal is to evaluate the facilitator training provided by the Wright-Patt Campus and increase our understanding of the training, experience, and attitude factors that make facilitators effective. This evaluation asks questions about your experiences as a facilitator , what you like and dislike about the facilitator's role, and how you view yourself. Your responses play a key role in increasing our understanding of students, both as individuals with different styles and goals, and as professionals with a critical role in the continuous improvement effort. Please be as open and accurate as possible.

Confidentiality. Information is being collected for research purposes. No one in your unit, MAJCOM, or the Wright-Patt Campus staff will EVER be allowed to see your individual responses.

Name: _____ Unit Address: _____

Military Rank/Civilian Rating:_____ Work Phone: _____

Job Series/Career field:_____ E-mail Address:_____

After completing the questionnaire please send it to:

Lt Col Jim Van Scotter and Capt Mark Wade
AFIT/LAA
2950 P Street, Bldg 641
WPAFB, OH, 45433-7765
255-7777 ext. 3344
E-mail: mwade@afit.af.mil

For each course you have attended, please enter the Month and Year you completed it in the space provided. For example, enter 10/94 for a course you completed in October, 1994. If you can't remember the exact date, enter your best estimate. *Then,* indicate whether or not you volunteered *to take the course by circling yes or no. If you did not attend a course,* do not enter anything in the Mo/Yr block. Finally, indicate whether the course was relevant to your duties as a facilitator.

TRAINING YOU HAVE RECEIVED

Course	WPAFB Campus	Other Source	I was a volunteer.	This course was relevant to my duties as a facilitator.
Basic Facilitator Course	Mo/Yr		yes / no	yes / no
Additional Facilitator Course	Mo/Yr		yes / no	yes / no
Metrics	Mo/Yr		yes / no	yes / no
Statistical Process Control	Mo/Yr		yes / no	yes / no
Conflict Management	Mo/Yr		yes / no	yes / no
Theory of Constraints	Mo/Yr		yes / no	yes / no
Team Training	Mo/Yr		yes / no	yes / no
Design of Experiments	Mo/Yr		yes / no	yes / no
MBTI Certification	Mo/Yr		yes / no	yes / no
Unit Self-Assessment	Mo/Yr		yes / no	yes / no
Covey Leadership	Mo/Yr		yes / no	yes / no
Other: (fill in)	Mo/Yr		yes / no	yes / no

Please name a team leader and *2 members for the three groups you have facilitated most recently.*
Please do your best to provide information that is accurate and complete.

YOUR EXPERIENCE AS FACILITATOR

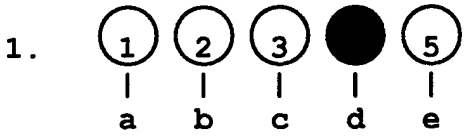
Organization: _____ When did facilitation occur?_____
Team Leader: _____ Grade: _____ Office symbol:_____ Phone:_____
Group Member: _____ Grade: _____ Office Symbol:_____Phone:_____
Group Member:_____ Grade: _____ Office symbol:_____Phone:_____

Groups have different objectives. How many groups with the following objectives have you worked with?

Group Objectives	In the past 12 months	At any time before the last 12 months
Problem solving team	_____	_____
Process improvement	_____	_____
Reengineering	_____	_____
Other	_____	_____

Please turn the page to continue

Please use the computer answer sheet to answer the rest of the questions in the evaluation.
Fill in the circle that corresponds to your BEST answer completely. Use a #2 Pencil.



1. **On average, how many times did you meet with each group?**
   a. 1-2 time
   b. 3-4 times
   c. 5-6 times
   d. 7-8 times
   e. 9 or more times

2. **How many groups do you expect to work with in the next 12 months?**
   a. none
   b. 1-2 groups
   c. 3-4 groups
   d. 5-10 groups
   e. more than 10 groups

3. **On average, how much of your time is spent on facilitator work?**
   a. less than 5 percent
   b. 5 to 15 percent
   c. 16 to 50 percent
   d. 51 to 84 percent
   e. 85 to 95 percent
   f. over 95 percent

4. **How much of your time would you like to spend on facilitator work?**
   a. less than 5 percent
   b. 5 to 15 percent
   c. 16 to 50 percent
   d. 51 to 84 percent
   e. 85 to 95 percent
   f. over 95 percent

5. **How long have you worked for the Air Force?**
   a. less than 1 year
   b. 1 to 4 years
   c. 5 to 10 years
   d. 11 to 20 years
   e. over 20 years

6. **What is your age?**
   a. under 25 years
   b. 25 to 34 years
   c. 35 to 44 years
   d. 45 to 54 years
   e. over 55 years

7. **What is your race?**
   a. White
   b. Black
   c. Hispanic
   d. Asian
   e. Native American
   f. Other

8. **What is your sex?**
   a. Male
   b. Female

9. **What is the highest educational level you have completed?**
   a. GED
   b. High School Degree
   c. Trade/Technical School
   d. 2-year college degree
   e. 4-year college degree
   f. graduate degree

Please turn the page to continue...

This section asks about your views, feelings, and experiences. There are no right or wrong answers. Like the Myers-Briggs, it will help us understand personal characteristics that may affect the way people approach the facilitator role.

Please use this scale to answer the questions below.

Strongly Disagree	Disagree	Neutral	Agree	Strongly Agree
1	2	3	4	5

Items 10 -45 are taken from the NEO Five-Factor Inventory* and *cannot be reprinted here due to copyright restrictions.

Please turn the page to continue...

46. Facilitating offers me a chance to test myself and my abilities.
47. Facilitating is a reward in itself.
48. If facilitating were more interesting, I would be motivated to perform better.
49. Mastering the job of facilitating meant a lot to me.
50. My talents, or where I can concentrate my attention best, are found in areas not related to facilitating.
51. Facilitating is valuable to me for no other reason than I like to do it.
52. A times I get so involved in facilitating that I forget what time it is.
53. Even though facilitating could be rewarding, I am frustrated and find motivation continuing only because of my paycheck.
54. I honestly believe I have all the skills to perform well as a facilitator.
55. I would make a fine model for an apprentice to follow in order to learn the skills he/she would need to succeed.
56. No one around here knows how to facilitate better than I do.
57. When it comes to facilitation, if anyone can find the answer, I'm the one.
58. I do not know as much as others do about facilitation.
59. Sometimes I don't know exactly what the priorities are when I am facilitating.
60. My responsibilities as a facilitator are very clear and specific.

Please turn the page to continue...

Please use this scale to answer the questions below.

Strongly Disagree	Disagree	Neutral	Agree	Strongly Agree
1	2	3	4	5

61. I know what I am supposed to do as a facilitator.
62. I can't always tell what people expect me to accomplish as a facilitator.
63. Facilitator training did a lot to improve my interpersonal skills.
64. I knew as much about process improvement before attending facilitator training as I do now.
65. My understanding of TQ is greater because of my facilitator training.
66. Facilitator training has not improved my ability to work with groups.
67. Overall, I am happy to be a facilitator.
68. I am very pleased with the kind of work I do as a facilitator.
69. As a facilitator, I get to work in some very nice places.
70. The people I work with as a facilitator are very pleasant.
71. I am dissatisfied with the work I do as a facilitator.
72. The things I learned in facilitator training have helped me do other work better.
73. My facilitator training seems to be helping my chances for promotion.
74. My facilitator training has done nothing for me personally.
75. My facilitator training helps me make an important contribution to the organizations I work with.
76. The organizations I work with go out of their way to support the facilitation process.
77. The teams I work with strongly support TQ.

Please use this scale to answer the questions below.

Extremely Ineffective	Very Ineffective	Slightly Ineffective	Slightly Effective	Very Effective	Extremely Effective
1	2	3	4	5	6

78. In general, my interpersonal skills are _____.
79. The way I handle group situations is usually _____.
80. My skills in keeping the group on track are _____.
81. When it comes to helping people solve problems, I would rate my performance as _____.
82. My skill as an instructor makes me _____.
83. I would rate my overall expertise as a facilitator as _____
84. I would describe my contribution to the groups I have worked with as _____.
85. I would rate my overall performance as a facilitator as _____.

Please turn the page to continue...

The statements about facilitation in this section may or may not be true.

Please indicate whether or not the statement is true.
(1) True (2) False

86. Every team should experience an icebreaker.
87. Norms should be a consensus issue.
88. The facilitator is the best person to present the team's final presentation/problem solution.
89. It is good when the team "group thinks."
90. Everyone has the potential to be creative.
91. Values are of little impact when working with a team.
92. The more a facilitator knows about the subject the team is working on, the more effective he/she will be.
93. If the non-verbal message contradicts the verbal message, we believe the non-verbal.
94. The Myers-Briggs Type Indicator should be administered to all teams.
95. Presentation style has no effect on the content of the presentation.
96. The facilitator should meet with the team leader before and after each meeting.
97. Planning and goal setting are part of team building.
98. Effective feedback uses positive non-verbal signals, is direct, and addresses specific behavior.
99. Getting consensus is a quick way to reach decisions in the group.
100. The Johari Window is composed of four panes.
101. The team leader should help prepare the agenda and outline tasks to be accomplished.
102. Validating non-verbal behavior involves raising questions about interpretation.
103. Once a team has passed through a stage of group development, it will not regress to that stage again.
104. The stage of a team's development is not important when considering an intervention.
105. Intervention is an action taken to help the team.
106. The first step to any intervention is observation.
107. A facilitator cannot remain silent and still intervene effectively.
108. A process observation technique is designed to increase the awareness of the dynamics in the group.
109. The intent of a communication is the receiver's version of the message.
110. Good listening may involve asking questions.
111. It is possible for the speaker to help others listen better.
112. Communication is more effective when you recognize your own prejudice.
113. Actively taking sides helps the facilitator become involved in the team's problem, and is a good way to

build trust with the team.

Thanks for taking the time to complete this evaluation.
Please send the booklet* and *score sheet to AFIT/LAA.

Appendix B: Grade and Rank Equivalents

	Grade and Rank Equivalents		
Grade Assigned	Enlisted Ranks	Officer Ranks	Civilian Grades
1	Airman Basic		
2	Airman		
3	Airman First Class		
4	Sergeant		
5	Staff Sergeant		
6	Technical Sergeant		GS-6
7	Master Sergeant		GS-7
8	Senior Master Sergeant		GS-8
9	Chief Master Sergeant		GS-9
10		Second Lieutenant	GS-10
11		First Lieutenant	GS-11
12		Captain	GS-12
13		Major	GS-13
14		Lieutenant Colonel	GS-14
15		Colonel	GS-15

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Vita

Captain Mark I. Wade is from Stoneham, Massachusetts. He graduated from the University of Massachusetts at Amherst in 1982 with a Bachelor of Arts degree in Chemistry. He received his commission into the United States Air Force through the Officer Training School in 1989, and completed the Operations Management Officers Course at Keesler AFB. Captain Wade was then assigned to the 67 Tactical Reconnaissance Wing (TRW) at Bergstrom AFB, Texas. During his tour at Bergstrom AFB, Captain Wade served as Emergency Actions Officer/Command Post Controller at the Wing Command Post in direct support of RF-4C flying operations. In 1993, following the closure of Bergstrom AFB, he was assigned to the 416 Bomb Wing, Griffis AFB, New York, where he served nearly two years in support of B-52 and KC-135 flying operations. With the closure of Griffis AFB, Captain Wade entered the Air Force Institute of Technology at Wright-Patterson AFB, Ohio graduating in 1996 with a Masters degree in Contracting Management. He was assigned to the F-16 Program Office, Aerospace Systems Center, AFMC, Wright-Patterson AFB, Ohio.

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13. ABSTRACT (*Maximum 200 Words*)

This study evaluated the TQM facilitator training course at Wright-Patt Campus, Wright-Patterson AFB. One-hundred sixty-two civilian and military trainees completed a 113 item survey containing 7 outcome scales based on Kraiger's (1993) cognitive, skill-based and affective training outcomes. Additional criteria, including experience, training, attitudinal, personality, and organizational support factors, were evaluated for their influence on training outcomes. Results from intercorrelational and hierarchical regression analysis strongly supported the theoretical model of effective facilitator training and suggest that the Wright-Patt Campus does provide effective TQM facilitator training. This study also identified several factors that appear to contribute to improved facilitator effectiveness: experience, training, personality, attitude, and organizational support.

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AFIT Control Number AFIT/GCM/LAR/96S-9

AFIT RESEARCH ASSESSMENT

The purpose of this questionnaire is to determine the potential for current and future applications of AFIT thesis research. **Please return completed questionnaire** to: AIR FORCE INSTITUTE OF TECHNOLOGY/LAC, 2950 P STREET, WRIGHT-PATTERSON AFB OH 45433-7765. Your response is **important.** Thank you.

1. Did this research contribute to a current research project? a. Yes b. No

2. Do you believe this research topic is significant enough that it would have been researched (or contracted) by your organization or another agency if AFIT had not researched it?
a. Yes b. No

3. **Please estimate** what this research would have cost in terms of manpower and dollars if it had been accomplished under contract or if it had been done in-house.

Man Years_____ $_____

4. Whether or not you were able to establish an equivalent value for this research (in Question 3), what is your estimate of its significance?

a. Highly Significant b. Significant c. Slightly Significant d. Of No Significance

5. Comments (Please feel free to use a separate sheet for more detailed answers and include it with this form):

_____ _____
Name and Grade Organization

_____ _____
Position or Title Address